CLAIMS

Having sufficiently described the invention, that which is claimed is:

1. A seamless steel tube of high mechanical resistance, good degree of toughness, good resistance to cracking in the metal base and the heat affected zone (HAZ) and good corrosion resistance, characterized by the material of which it is manufactured being made up basically of Fe and the following chemical composition expressed in % by weight of additional elements:

C	0.06 to 0.13
Mn	1.00 to 1.30
Si	0.35 Max..
P	0.015 Max.
S	0.003 Max.
Mo	0.1 to 0.2
Cr	0.10 to 0.30
V	0.050 to 0.10
Nb	0.020 to 0.035
Ni	0.30 to 0.45
Al	0.015 to 0.040
Ti	0.020 Max.

N 0.010 Max.

Cu 0.2 Max.

And also the chemical composition with the following relation among the alloying elements.

$$0.5 < (Mo + Cr + Ni) < 1;$$

$$(Mo + Cr + V)/5 + (Ni + Cu)/15 \leq 0.14$$

2. A seamless steel tube with high mechanical resistance, good hardness, good resistance to cracking in the metal base and in the HAZ, and good corrosion resistance as in Claim 1, also characterized by a Titanium content of no more than 0.002% by weight.

3. A seamless steel tube with high mechanical resistance, good hardening, good resistance to cracking in the metal base and in the HAZ, and good corrosion resistance as in Claims 1 and 2, also characterized by the presence of a resistance to cracking measured by the CTOD test at a temperature of -40°C $\geq$ 0.8 mm in the metal base and a CTOD test at a temperature of 0°C $\geq$ 0.5 mm in the heat affected zone.

4. A seamless steel tubing with high mechanical resistance, good hardening, good resistance to cracking in the metal base and

in the HAZ, and good corrosion resistance as in Claims 1, 2 and 3, **characterized** by the resistance to corrosion measured by the HIC test in accordance with norm NACE TM0284 with solution A being 1.5% max. for CTR and 5.0% max. for CLR.

5. A seamless steel tubing with high mechanical resistance, good hardening, good resistance to cracking in the metal base and in the HAZ, and good corrosion resistance as in Claims 1-4, **characterized** by having heavy gauge walls $\geq$ 30 mm.

6. A seamless steel tubing with high mechanical resistance, good hardening, good resistance to cracking in the metal base and in the HAZ, and good corrosion resistance as in the previous claim, **characterized** by having heavy gauge walls $\geq$ 40 mm.

7. A seamless steel tubing with high mechanical resistance, good hardening, good resistance to cracking in the metal base and in the HAZ and good corrosion resistance as in any of the previous claims 1- 6, **characterized** by possessing the following properties:

$YS_{T room} \geq 65$ Ksi

$YS_{130°C} \geq 65$ Ksi

$UTS_{T room} \geq 77$ Ksi

UTS $_{130°C} \geq$ 77 Ksi

The energy absorbed was evaluated at a temperature of up to -10°C $\geq$ Joules

Hardness $\leq$ 240 HV10 maximum

8. A seamless steel tubing with high mechanical resistance, good hardening, good resistance to cracking in the metal base and in the HAZ and good corrosion resistance as in any of the previous claims 1-7, **characterized** by possessing the following properties:

YS $T_{room} \geq$ 65 Ksi

YS $_{130°C} \geq$ 65 Ksi

UTS $T_{room} \geq$ 77 Ksi

UTS $_{130°C} \geq$ 77 Ksi

YS/UTS $\leq$ 0.89

Elongation $\geq$ 20%

Energy absorbed evaluated at a temperature of up to -20°C $\geq$ 380 Joules

Shear Area at -10°C = 100%

Hardness $\leq$ 220 HV10

9. A process for manufacturing the seamless steel tubing with high mechanical resistance, good toughness, good resistance to cracking in the metal base and in HAZ and good corrosion resistance made up of steps: 1. Manufacturing the steel; 2. Obtaining the solid cylindrical piece; 3. Perforating said piece; 4. Laminating said steel piece; 5. Subjecting the laminated tubing to heat treatment, **characterized** said process by the addition of certain amounts of elements during the manufacturing and the elimination of other elements so as to produce a final composition in % by weight that contains, besides iron and inevitable impurities, the following:

C	0.06 to 0.13;
Mn	1.00 to 1.30;
Si	0.35 Max.;
P	0.015 Max.;
S	0.003 Max.;
Mo	0.01 to 0.20;
Cr	0.10 to 0.30;
V	0.050 to 0.10;
Nb	0.020 to 0.035;
Ni	0.30 to 0.45;
Al	0.015 to 0.040;
Ti	0.020 Max.;
N	0.010 Max.;

Cu 0.2 Max.

and also by the chemical composition complying with the relationship among the alloying elements:

$0.5 \leq (Mo + Cr + Ni) < 1;$

$(Mo + Cr + V)/5 + (Ni + Cu)/15 \leq 0.14.$

10. A process for manufacturing seamless steel tubing as claimed in the previous claim characterized by said heat treatment consisting of austeniticizing to a temperature of between 900 and 930° C, followed by interior-exterior hardening in water and then heat treatment for tempering at a temperature of between 630 and 690° C as defined by the following equation:

T_{Temp} (°C) = [-273 + 1000/ (1.17 – 0.2 C -0.3 Mo – 0.4V)] +/- 5